



APPENDIX B

SCVC Current Operations

*Suffolk County Vector Control & Wetlands
Management Long Term Plan &
Environmental Impact Statement*



**TASK 4 SUFFOLK COUNTY VECTOR
CONTROL CURRENT OPERATIONS**

Prepared for:

**Suffolk County Department of Public Works
Suffolk County Department of Health Services
Suffolk County, New York**

CASHIN ASSOCIATES, P.C.

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**SUFFOLK COUNTY VECTOR CONTROL AND WETLANDS MANAGEMENT
LONG - TERM PLAN AND ENVIRONMENTAL IMPACT STATEMENT**

PROJECT SPONSOR

Steve Levy
Suffolk County Executive



Department of Public Works

Charles J. Bartha, P.E.
Commissioner
Richard LaValle, P.E.
Chief Deputy Commissioner
Leslie A. Mitchel
Deputy Commissioner

Department of Health Services

Brian L. Harper, M.D., M.P.H.
Commissioner
Vito Minei, P.E.
Director, Division of Environmental Quality

PROJECT MANAGEMENT

Project Manager: Walter Dawydiak, P.E., J.D.
Chief Engineer, Division of Environmental Quality, Suffolk County Department of Health Services

**Suffolk County Department of Public
Works, Division of Vector Control**

Dominick V. Niniaggi
Superintendent
Tom Iwanejko
Principal Environmental Entomologist
Mary E. Dempsey
Biologist

**Suffolk County Department of
Health Services, Office of Ecology**

Martin Trent
Acting Chief
Kim Shaw
Bureau Supervisor
Robert M. Waters
Bureau Supervisor
Laura Bavaro
Senior Environmental Analyst
Phil DeBlasi
Environmental Analyst
Jeanine Schlosser
Principal Clerk

SUFFOLK COUNTY LONG TERM PLAN CONSULTANT TEAM	
Cashin Associates, P.C.	Hauppauge, NY
Subconsultants	
Cameron Engineering, L.L.P.	Syosset, NY
Integral Consulting	Annapolis, MD
Bowne Management Systems, Inc.	Mineola, NY
Kamazima Lwiza, PhD	Stony Brook University, Stony Brook, NY
Ducks Unlimited	Stony Brook, NY
Steven Goodbred, PhD & Laboratory	Stony Brook University, Stony Brook, NY
RTP Environmental	Westbury, NY
Sinnreich, Safar & Kosakoff	Central Islip, NY
Bruce Brownawell, PhD & Laboratory	Stony Brook University, Stony Brook, NY
Anne McElroy, PhD & Laboratory	Stony Brook University, Stony Brook, NY
Andrew Spielman, PhD	Harvard School of Public Health, Boston, MA
Richard Pollack, PhD	Harvard School of Public Health, Boston, MA
Masahiko Hachiya, PhD	Harvard School of Public Health, Boston, MA
Wayne Crans, PhD	Rutgers University, New Brunswick, NJ
Susan Teitelbaum, PhD	Mount Sinai School of Medicine, NY
Zawicki Vector Management Consultants	Freehold, NJ
Michael Bottini, Turtle Researcher	East Hampton, NY
Robert Turner, PhD & Laboratory	Southampton College, NY
Christopher Gobler, PhD & Laboratory	Southampton College, NY
Jerome Goddard, PhD	Mississippi Department of Health, Jackson, MS
Sergio Sanudo, PhD & Laboratory	Stony Brook University, Stony Brook, NY
Robert Cerrato, PhD	Stony Brook University, Stony Brook, NY
Suffolk County Department of Health Services, Division of Environmental Quality	Hauppauge, NY

Primary research for this report was conducted by Cashin Associates (personnel including John Perrotta). It was edited and revised in response to comments by Cashin Associates (personnel including ____). Review was provided by Cashin Associates (personnel including David Tonjes, PhD), Suffolk County Department of Public Works, Division of Vector Control, and Suffolk County Department of Health Services. Additional comments have been received from _____.

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Abbreviations and Acronyms

Bti	<i>Bacillus thuringiensis var. israelensis</i>
Bs	<i>Bacillus sphaericus</i>
CDC	Center for Disease Control
GIS	Geographic Information System
GPS	Global Positioning Systems
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
RAMP	Rapide Analyte Measurement Platform
SCDHS	Suffolk County Department of Health Services
SCDPW	Suffolk County Department of Public Works
SCVC	Suffolk County Vector Control
ULV	Ultra-Low Volume
USEPA	United States Environmental Protection Agency's
VCMS	Vector Control Management System

1. Description of SCVC

Suffolk County Vector Control (SCVC) is the Division of the Suffolk County Department of Public Works (SCDPW) that is responsible for controlling mosquito populations that may be an infestation or public health threat in Suffolk County. To perform this task, SCVC works closely with the Suffolk County Department of Health Services (SCDHS) to educate the public, monitor mosquito breeding activity and perform disease surveillance, and ultimately carry out control measures.

SCVC has a staff of approximately 45 people, including the Division Superintendent, clerks, compliance and laboratory staff, and field crew. The Superintendent manages the Division. An entomologist, biologist, computer programmer and analyst, and lab technicians work under the Superintendent to organize information for quick decision making. The four field crews, made up of a foreman and four to eight equipment, not; operators and laborers, execute the plans and decisions set forth by the Superintendent. The field crew are full-time, year-round employees of the Division. Appendix A contains the Vector Control Organizational chart as of November 5, 2004.

The Division operates out of the County Office Complex in Yaphank, a facility it shares with SCDHS. The building contains offices for staff, a conference room, kitchenette, and a garage for the repair of machinery. In addition, the Division also has a free-standing garage used for storage of pesticides and equipment. At present the Division is renovating a former pesticide mixing shed into a storage shed for the pesticides.

The Division works with SCDHS to educate the public, identify health threats, and plan control measures. SCVC is answerable to the Commissioner, Chief Deputy and Deputy Commissioners of the SCDPW, and ultimately to the County Executive and Suffolk County Legislature. SCVC works under the authority of the NYS Public Health Law, Article 15, Sections 1500, 1501, 1502 and Section C8-4 of the Suffolk County Charter, Part 380 of the Suffolk County Code.

The Legislature approves the SCVC Plan of Work and budget in November each year as part of the County budget. The SCVC Superintendent prepares the budget each year and submits it to the Commissioner of the SCDPW in May. The budget is included with the

overall SCDPW annual budget and is then sent to County Executive in June to be included in the County Budget which is voted on in November by the Legislature. The Division's 2005 requested budget is \$2,750,935 (Table 1), broken down as: \$1,986,273 for personnel services; \$46,800 for equipment (office equipment, calibration equipment, radio and communication, furniture, etc.); \$704,500 for supplies and materials (books and research materials, computer software, pesticides which accounts for \$370,000 of the \$704,500, rent of office equipment, etc.); and \$13,362 for travel expenses.

Table 1: SCVC 2005 Budget

Personnel	\$1,986,273
Equipment	\$46,700
Supplies and Materials	\$704,500
Books and Research, Computers	\$334,500
Pesticides	\$370,000
Travel	\$13,362
Total	\$2,750,935

The Plan of Work is a written description of the Division's purpose, history, current operations, and goals for the following year and the future. The Plan of Work is prepared by the Superintendent and submitted to the Legislature in October for approval in November.

**INSERT DESCRIPTION OF SCDHS ARTHROPOD-BORNE DISEASE
LABORATORY & PUBLIC HEALTH DIVISION HERE**

2. Public Education

Public education about mosquito control in Suffolk County is coordinated through SCDHS. SCDHS staff assists in educating property owners about the importance of cleaning any potential mosquito breeding areas. As part of the education efforts, SCDHS make presentations and distribute brochures such as the “Fight the Bite” campaign brochure. The “Fight the Bite” brochure describes the diseases that are carried by mosquitoes, the importance of eliminating breeding areas around the home, what people can do to protect themselves, and what Suffolk County does to protect the public.

In addition to the SCDHS efforts, SCVC offers public assistance to help homeowners who have mosquito problems, by visiting the property and removing breeding areas. SCVC ground crews hang tags on the doors of properties visited which describe the reason for work at the property, and, also, to provide basic information about mosquito control. The tags also direct the homeowner to the SCVC website for more information.

The County websites for SCVC and SCDHS provide current information about upcoming spray events and general work of SCVC, and information about what the public can do to protect themselves, and help combat mosquitoes around their homes. The website also describes the various methods and products used by SCVC for mosquito control. All brochures, tags, and public notices refer the public to the website for additional information about mosquito control.

3. Surveillance and Monitoring

A major component of the Division's work is surveillance and monitoring. SCVC monitors mosquito breeding, populations and performs disease surveillance throughout the County. In addition to these active efforts, complaints and requests for service from the public are included as monitoring information. The Division can identify areas of concern from the collected information and so treats specific areas rather than conducting costly and time-consuming treatment of wide spread areas.

Monitoring of breeding activity is performed by "dipping" for mosquito larvae in known breeding areas (generally wetlands). Dipping is performed by collecting a small amount of water with a cup attached to a dowel. The presence of mosquito larvae in the water provides an indication of breeding activity and pesticide effectiveness when counts are compared from before and after pesticide applications. Entomologists from the SCDHS identify the species found, to determine if species of concern are present, and so guide control decisions.

Monitoring of larval mosquitoes is conducted on a weekly basis usually starting on Mondays from late-April through mid-September in approximately 2,000 identified natural breeding areas.

Adult mosquito populations monitoring and disease surveillance are mainly performed with various traps maintained by SCVC. SCVC has 27 New Jersey Light Traps, 304 Carbon Dioxide Baited CDC Light Traps, and 23 CDC Gravid Traps. In 2003 SCVC collected mosquitoes from 40 traps per week from June 2 to October 9, and collected 111,458 mosquitoes for sorting and disease surveillance.

A New Jersey Light Trap consists of a light bulb placed above a metal cylinder with a fan fitted to the top of the cylinder. The fan draws mosquitoes that are attracted to the light into the cylinder, where they become trapped. The trap is used to evaluate the abundance of mosquitoes in an area and, and to evaluate the effectiveness of a pesticide application when trap counts are compared from before and after the pesticide applications.

A CDC Light Trap is similar to a New Jersey Light Trap except it is more portable and is generally used to focus on human-biting species of mosquito. A small amount of dry ice (frozen carbon dioxide, CO₂) is usually placed in the trap, which releases the CO₂ as it melts. This mimics the CO₂ in human respiration, thereby attracting mosquitoes.

A Gravid Trap is used to collect mosquitoes which have had a bloodmeal and are seeking a location to lay eggs. The trap consists of a tub of stagnant, polluted water with a collection box mounted over the tub. Gravid mosquitoes are attracted to the water and are drawn in by a fan into the collection box. The trapped mosquitoes are collected, sorted, and tested for various diseases.

Field staff is also used to monitor adult populations and breeding activity. Field Staff perform landing rate counts to help estimate populations. A landing rate count is simply a count of the number of mosquitoes that land on a person in ten minutes.

Based on the information obtained from the various monitoring, the Division will decide if control measures, whether chemical or biological, are needed. Another deciding factor is information based on disease surveillance. To the Division, all mosquitoes are considered potential vectors and therefore mosquito surveillance is disease surveillance. Specific disease surveillance, however, is carried out by the SCDHS in conjunction with SCVC.

A sampling of the approximately 50,000 live mosquitoes, (collected from CDC traps and Gravid traps) are tested each year for virus. Live samples are frozen and sent to the New York State Department of Public Health in Albany for testing. Additional surveillance includes the testing for the presence of virus in birds.

Up to 20 dead birds are collected throughout the County each day. The birds are processed with the SCDHS's RAMP machine to check for the presence of viruses. The RAMP machine (Rapid Analyte Measurement Platform) was installed in the summer of 2004 and can provide results within 24 hours.

Before 2004, when SCDHS did not have the RAMP machine, birds were sent to the New York State Department of Environmental Conservation (NYSDEC) Wildlife Pathology

Unit in Albany. Testing by the State can take up to 14 days. Although the RAMP test is extremely fast and accurate, dead birds will continue to be still sent to Albany to confirm the results of the RAMP test until all are confident that the RAMP test is reliable.

Disease surveillance in horses and humans is also conducted by the SCDHS.

4. Decision Making and Compliance

The decision to perform any form of mosquito control is based on surveillance and complaints from the public and is coordinated by the Superintendent. This surveillance-oriented approach is recognized by the US Environmental Protection Agency's (USEPA) Pesticide Environmental Stewardship Program as the most effective and environmentally sound manner in which to conduct a mosquito control program. This is also the basis for the New York State Department of Health (NYSDOH) West Nile Virus Response Plan.

Field crews are responsible for collecting data from surveillance and sampling activities. Areas identified as breeding points and larvicide treatment sites are logged using Global Positioning Systems (GPS). All data is recorded by the field crews on both paper forms and in a portable hand-held computer. The forms are returned to the office each day, and the hand-held computers are downloaded into the Vector Control Management System (VCMS) software database.

VCMS is a program by Advanced Computer Resources Corp. that offers a database, Geographic Information System (GIS), and mobile data collection system for vector control agencies. The software logs requests for service, breeding data, pesticide application data, regulatory requirements, trap data, weather data, and other information collected or used by vector control agencies. The software allows SCVC to easily organize its data and can help correlate information to make the decision making process faster and more accurate.

As a general rule, SCVC attempts to combat mosquitoes by means of water management and highly specific larvicides. Adulticide treatment is only considered when other measures are either insufficient or not feasible. The Division's Superintendent reviews all applicable data and makes the decisions to perform water management, larviciding, and adulticiding for pestiferous mosquitoes as outlined and approved in the Plan of Work. The decision to apply adulticide during a public health emergency, however, is made by SCDHS.

If a positive mosquito pool or positive bird is found through surveillance activities, the Commissioner of the SCDHS is notified that the County may have a public health

emergency. If the Commissioner of the SCDHS declares a public health emergency, the Commissioner of NYSDOH is contacted to confirm the emergency. Once the State declares a public health emergency, operational control of SCVC is turned over to the SCDHS. Practically, SCVC and SCDHS work together during a public health emergency to plan the adulticide application.

NYSDEC permits are required for all chemical applications. The approval process has been streamlined for implementation following the declaration of a public health emergency, so as to allow for immediate applications, if necessary. During a public health emergency SCVC is also allowed to override the “no-spray” list. While SCVC is not required to contact individuals on the “no-spray” list during a health emergency, these individuals are contacted as a courtesy to inform them that a spray event will take place.

Decisions to apply chemical treatments to wide-spread areas are reserved for the Superintendent. However, larviciding of small areas is left to experienced field crews who are licensed pesticide applicators. Generally, as field crews respond to complaints by the public, they can treat for larvae in residential areas if they determine treatment is warranted.

While all work is approved by the County Legislature or the State, USEPA and NYSDEC provide another level of monitoring and approval. NYSDEC permits all water management projects, and all chemicals used by SCVC are USEPA registered and NYSDEC approved. USEPA tests the materials for safety and the NYSDEC places local restrictions on what materials and quantities can be used.

NYSDEC is notified daily of the locations of the field crews and when chemicals or water management work will be performed. This allows NYSDEC to perform random spot checks to observe the work and check that the applications conform to the regulations. NYSDEC also observes the calibration of chemical application equipment, and requires annual reports of work and reviews them for conformance.

The annual report details all pesticide applications and provides an accounting of materials as a check that SCVC is working within the limits of its license. In addition to the report, NYSDEC requires that a public notice be posted twice a year to provide

information about the chemicals that may be applied during the mosquito season. Application methods and health and environmental hazards are also described.

5. Control Procedures

SCVC employs several methods of mosquito control, and attempts water management and biological control before adult control. Limiting the areas that mosquitoes can breed, and treating the areas in which they breed offers the most cost-efficient and effective means of controlling mosquitoes. Controlling adult mosquitoes is costly and difficult because of the wide areas in which mosquitoes can travel, and the dispersion of a mosquito brood (a group of recently emerged adult mosquitoes).

SCVC performs water management from October 1 through April 30. This work is an emphasis of the Division, because it is seen as the best way to reduce pesticide usage. The work included is to repair and/or replace existing culverts, tide gates, tide boxes, and other water control structures. SCVC maintains portions of what has been traditionally estimated to be 660 miles of mosquito control ditches in the County. Ditches maintenance addresses slumping, in-filling, erosion, and blockage of these structures.

The amount of ditch maintenance has been reduced over the past few years. Table 2 shows the actual maintenance lengths as compared to the work-plan-forecasted lengths for the most recent four years:

Table 2: Annual ditch maintenance work

Year	Forecasted Length (ft)	Actual Length (ft)
2004	400,000	
2003	400,000	176,646
2002	400,000	165,580
2001	750,000	480,631

The ditches are reconstructed to within six inches of their original three-foot depth and width to allow tidal flushing in wetland areas, and allow standing water to drain, which limits breeding areas. The work is performed by means of hand excavating or with the use of a low ground pressure amphibious rotary excavator. These machines allow SCVC to quickly perform the work with minimal damage to the wetland area.

Table 3 shows the various pieces of equipment owned by the Division, and their purpose:

Table 3: SCVC Equipment.

Equipment	Quantity	Acquired	Purpose
70 SR - Excavator	1	2000	Low ground pressure machine with conventional style tracks lengthened to reduce their ground pressure on marsh.
Quality Kobelco – Excavator	1	2000	Amphibious excavator used for water management, with large pontoon style tracks that allows it to be used on soft areas.
Quality Kobelco – 11x24 HYD Rotary Ditcher	1	1995	Rear-mounted quality 23" or 36" high efficiency rotary ditcher with circular ditching implement that can produce shallow ditches or wider channels, and can side cast excavated material to one side of ditch.
Quality Kobelco – Rotary Ditcher	1	2000	Rear-mounted quality 23" or 36" high efficiency rotary ditcher with circular ditching implement that can produce shallow ditches or wider channels, and can side cast excavated material to one side of ditch.
Mowhawk, Ltd. – Piston Bully 2000	1	2003	Wetlands maintenance. ‘Sno-cat’ machine, dumper/grader equipped with a 12-way blade in front and a rear dump body capable of mounting a Dondi rotary ditcher.
Trucks	20	Various	Field crew transportation, ground aduicide applications, etc.
Trailers	6	Various	Transportation of equipment

London Fog – Ultra Low Volume Truck Mounted Aerosol Generator	3	2004	Generators with GPS tracking and computer logging to generate maps of truck spraying routes.
Pipe Cleaner	1	1998	Drainage pipe cleaner.
Maruyama – Backpack Mist/Duster (Blower)	20	2000 – 2004	Gasoline powered backpack blower capable of applying liquid or granular pesticides, capable of being changed from liquid application to granular application in the field. Equipped with separate and interchangeable containers for liquid and granular material and settings capable of calibration for varying application rates.
Corn Seeders	4		Shoulder apparatus used solely on Fishers Island for application of larvicide granules.

NYSDEC issues all permits for ditch maintenance work. The permits are issued to maintain existing ditches. The permit does not authorize any new ditches or water control structures to be installed in Suffolk County. The permits limit SCVC to the winter time frame due to concerns of animal nesting during the summer months. SCDHS Office of Ecology is also consulted to ensure conformance with other wetlands management efforts such as the Peconic Estuary Plan.

SCVC utilizes their own labor force to perform all maintenance, and provides assistance, in the form of equipment, to local municipalities to maintain drainage structures which could serve as breeding areas. The field crews generally identify areas that require maintenance during the summer, and perform the work in winter when allowed by the permit.

The Division also partners with wetlands conservation groups including US Fish and Wildlife Service, NYSDEC and Ducks Unlimited, Inc., and is a member of the Long

Island Wetlands Restoration Initiative. While the Division does not initiate or manage wetlands projects for the Initiative, it provides design advice, and loans specialized equipment for the work. The Division seeks to ensure that wetland restoration projects are performed so that mosquito management issues are adequately addressed.

When water management is not effective at completely preventing mosquito breeding, biological control of mosquito larvae is implemented. Larval control is performed during the mosquito breeding season ranging from about May 1 to September 30.

Stocking of freshwater minnows (*Gambusia affinis*) is an effective means of mosquito control. The fish are used in bodies of freshwater such as ponds and recharge basins where they eat mosquito larvae. This method of larval control is labor intensive but can provide long term control. Fish are acquired from commercial sources.

Larviciding is the most effective means of larval control. In a season SCVC treats approximately 1,500 of the 2,077 identified natural breeding areas in the County as required based on surveillance; and will treat the hundreds of thousands of artificial breeding areas (anywhere that water collects and remains long enough for breeding) as required based on complaints or requests for service. Included in the artificial breeding areas are approximately 5,700 catch basins throughout the County which are treated for larvae.

Three larvicides are used by the Division, and they are rotated and strictly used as directed to avoid larvae resistance to the products. The three larvicides are the bacterial pesticide *Bacillus thuringiensis var. israelensis* (Bti), the juvenile hormone treatment methoprene, and a bacterial product, *Bacillus sphaericus* (Bs).

Bti has been used by the County since 1982 as a larvae specific treatment product. The product is considered virtually non-toxic to humans by the USEPA, and is approved for use in the most highly environmentally sensitive areas. Bti is effective in freshwater areas and only effective in salt marshes when applied under the proper conditions.

Altosid is a product containing methoprene. It has the ability to prevent larvae from molting into adult mosquitoes. This product has been used by the Division since 1995,

and has been very successful. The product is highly specific for larvae and is generally considered non-toxic to humans and other higher organisms by the USEPA. Altosid can be applied to salt marshes under a wider range of conditions than Bti; and has been shown to be the only effective larvicide for certain species of mosquito, making it a favorable product. Altosid is also available in extended release (up to 150 day) briquets making them extremely useful in treating catch basins.

Vectolex is a Bs product that has been used by the Division since 1998, and its use has been greatly expanded in recent years. The product is a live bacterium that can control some species of mosquito in freshwater areas for several weeks. Drawbacks to this product are that it is not effective against all species, and does not sustain if the breeding site dries out.

Ground crews hand-apply larvicides to thousands of artificial and small natural breeding areas as required when responding to complaints. However, over 90 percent of larvicides are applied by helicopter over salt marshes. The Division contracts with a helicopter service to apply larvicides on Tuesdays through Thursdays.

The helicopter is a 3,200 lb aircraft with an 18'-6" radius rotor operated by North Fork Helicopters, Ltd. of Cutchogue, New York. The helicopter is fitted with two Beecomist nozzles 9' from the centerline, oriented straight back. They have a flow rate of 25.2 oz/min, and can create a 300' swath from 75' to 150' above the canopy at 70 mph, with aerosol diameter of 25-30 microns.

Methoprene released into the marshes is encapsulated so that it is effective for a longer period of time. Ground crews check the marshes on Mondays, and based on the monitoring and weather forecast the decision is made to larvicide during the week.

While water management and larviciding are extremely effective, adulticiding is usually required in some places in the County. Large broods of salt marsh mosquitoes impact the ability of people to live comfortably in their own yards and neighborhoods. Pesticides are not allowed to be used in federal wetlands (including the William Floyd Estate in Mastic and the Fire Island National Seashore). This results in most adulticiding being undertaken to address large broods of salt marsh mosquitoes that travel from these areas into nearby

communities. When this happens, adulticiding is the only option available to ensure a public health threat does not occur.

Adulticiding may be performed from approximately June 1 through September 15. Because mosquitoes are mainly active at dawn and dusk, adulticiding is performed by field crew on an overtime basis. Adulticiding is performed on Tuesdays through Thursdays in the most infested areas by means of ultra-low volume (ULV) truck-mounted foggers, and with hand-held units at the communities on Fire Island, which are adjacent to protected federal wetlands.

Adulticides can be applied aerially using helicopters, but this has not been a standard practice of late. Aerial applications of adulticide are almost always occasioned by the need to control West Nile Virus. In 2004, two aerial applications, in place of truck applications, were allowed by NYSDEC, in support of an experiment testing the impact of aerial adulticides on the environment.

SCVC typically uses one of three adulticide products: Scourge, Anvil, and malathion. Scourge has been used since 1995 in truck foggers and in aerial applications. Anvil has been used since 1999 in handheld devices. Malathion has been used for over 20 years.

The Division works carefully to apply these products to limit any adverse impacts. Limitations include strict adherence to product labels and NYSDEC requirements, maintaining a 100 foot setback from any water regardless of whether required by the label, larger setbacks from wetland areas, and a setback from “no-spray” residences.

SCVC maintains a 150 foot setback from “no-spray” residences when applying with ULV foggers, and a quarter-mile when performing aerial applications. During a public health emergency, however, the Commissioner of Health can override the list.

Prior to an adulticide application a public notice must be made. Public notices are made 24 hours prior to the application, and are published by the SCDHS. Notices are posted on the SCDHS website, on a call-in hotline, and in Newsday and on News 12. Broadcast faxes are also sent to Towns and to the Suffolk County Legislators. Suffolk County Board of Cooperative Educational Services (BOCES) is also notified, and they in turn

notify schools. Some local radio stations also broadcast the notice. In addition to these notices, SCVC is also required to post an 8.5”x11” orange sign at the entrance to parks where applications will take place. Known beekeepers will also be contacted or avoided during the application. Any croplands are avoided during the application.